

WHAT IS CLAIMED IS:

1. A multi-beam scanning optical system,  
comprising:

5 a light source having at least three light-  
emitting points;

deflection means for deflecting at least three  
light fluxes emitted from the at least three light-  
emitting points to a surface to be scanned; and

10 scanning optical means for guiding the at least  
three light fluxes which are deflected and reflected  
on the deflection means onto the surface to be  
scanned, each of the at least three light fluxes  
being entered into the surface to be scanned at an  
angle within a sub-scanning section,

15 wherein, provided that a variation in lengths  
of scanning lines which is caused when each of the at  
least three light fluxes is entered into the surface  
to be scanned at an angle within the sub-scanning  
section is represented as  $\Delta Y1$ , a variation in lengths  
20 of scanning lines which is caused when each of the at  
least three light fluxes is allowed to enter as a  
non-parallel light flux to a deflection surface of  
the deflection means within a main-scanning section  
is represented as  $\Delta Y2$ , and a variation in lengths of  
25 scanning lines which is caused from a difference of  
wavelength between at least two of the at least three  
light fluxes is represented as  $\Delta Y3$ ,

values of  $\Delta Y_1$ ,  $\Delta Y_2$ , and  $\Delta Y_3$  are set so as to satisfy

$$|\Delta Y_1 + \Delta Y_2 + \Delta Y_3| < |\Delta Y_1|.$$

5           2. A multi-beam scanning optical system  
according to claim 1, wherein in the case where an  
optical path length of a light flux from a light-  
emitting point nearest an optical axis of the  
scanning optical means to the surface to be scanned  
10 is longer than optical paths of light fluxes from  
other light-emitting points to the surface to be  
scanned, the light fluxes which are deflected and  
reflected on the deflection means are converted into  
convergent light fluxes, and in the case where the  
15 optical path length of the light flux from the light-  
emitting point nearest the optical axis of the  
scanning optical means to the surface to be scanned  
is shorter than the optical paths of the light fluxes  
from the other light-emitting points to the surface  
20 to be scanned, the light fluxes which are deflected  
and reflected on the deflection means are converted  
into divergent light fluxes.

          3. A multi-beam scanning optical system  
25 according to claim 1, wherein the light source  
comprises a plurality of light source units,  
at least one of the plurality of light source

units includes a plurality of light-emitting points,  
a variation in lengths of scanning lines on the  
surface to be scanned, which are formed by light  
fluxes from light-emitting points in the plurality of  
5 light source units is reduced by converting the light  
fluxes which are deflected and reflected on the  
deflection means into non-parallel light fluxes  
within the main-scanning section, and

a variation in lengths of scanning lines on the  
10 surface to be scanned, which are formed by light  
fluxes from the plurality of light-emitting points in  
the at least one light source unit is reduced by  
making a difference of wavelength between the light  
fluxes from the light-emitting points.

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4. A multi-beam scanning optical system  
according to claim 1, wherein the light source  
comprises a plurality of light source units,

at least one of the plurality of light source  
20 units includes a plurality of light-emitting points,  
a variation in lengths of scanning lines on the  
surface to be scanned, which are formed by light  
fluxes from light-emitting points in the plurality of  
light source units is reduced by making a difference  
25 of wavelength between the light fluxes from the  
light-emitting points in the light source units, and  
a variation in lengths of scanning lines on the

surface to be scanned, which are formed by light  
fluxes from the plurality of light-emitting points in  
the at least one light source unit is reduced by  
converting the plurality of light fluxes which are  
5 deflected and reflected on the deflection means into  
non-parallel light fluxes within the main-scanning  
section.

5. A multi-beam scanning optical system  
10 according to claim 1, wherein the at least three  
light fluxes are entered into the deflection surface  
of the deflection means at irregular angles within  
the main-scanning section.

15 6. An image forming apparatus, comprising:  
the multi-beam scanning optical system  
according to any one of claims 1 to 5;  
a photosensitive member which is located on the  
surface to be scanned;  
20 a developing unit that develops, as a toner  
image, an electrostatic latent image which is formed  
on the photosensitive member scanned with the light  
fluxes by the multi-beam scanning optical system;  
a transferring unit that transfers the  
25 developed toner image to a transfer material; and  
a fixing device that fixes the transferred  
toner image to the transfer material.

7. An image forming apparatus, comprising:  
the multi-beam scanning optical system  
according to claim 6; and

a printer controller that converts code data  
5 inputted from an external device into an image signal  
and outputs the image signal to the multi-beam  
scanning optical system.

8. A color image forming apparatus, comprising:  
10 a plurality of multi-beam scanning optical  
systems, each of which is the multi-beam scanning  
optical system according to any one of claims 1 to 5;  
and

a plurality of image bearing members each  
15 located on a surface to be scanned of the multi-beam  
scanning optical systems, which form images of  
different colors.

9. A color image forming apparatus according to  
20 claim 8, further comprising a printer controller that  
converts a color signal inputted from an external  
device into image data of different colors and  
outputs the image data to the respective multi-beam  
scanning optical systems.